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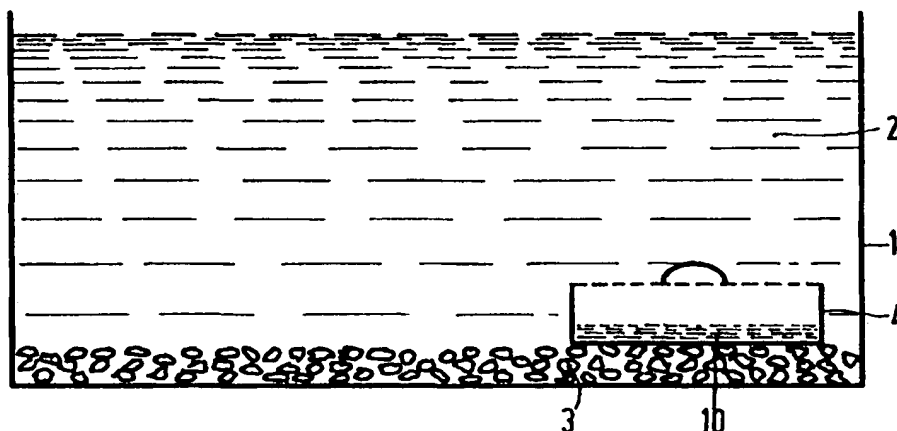
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(54) Title: SUSPENDED IMPURITIES FILTER



## (57) Abstract

A device for purifying water in a basin (1), such as a fishpond or an aquarium, for example, wherein the device comprises a flat, box-shaped construction (4) having a closed bottom (5) and a closed upright wall (6) or walls, which box-shaped construction is provided on its upper side with a coarse-mesh covering (7) and which can be freely placed on the bottom (5) of the basin.

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**Title: Suspended impurities filter**

The invention relates to a device for purifying water in a basin, such as a fishpond or an aquarium, for example.

5 In basins in which fish are kept, such as ponds and aquariums, the water often becomes turbid and unclear due to the presence of suspended impurities therein.

In order to ensure that the water remains clear and in order to create good living conditions for the fish, it is  
10 necessary to remove the aforesaid impurities from the water. The impurities consist on the one hand of suspended algae and on the other hand of other impurities, such as the excrements of the fish.

The suspended algae can be removed from the water, for  
15 example by using a device as disclosed in Dutch patent No. 10 04 813 in the name of the present applicant, wherein use is made of water fleas.

The other impurities, such as the excrements of the fish, indeed sink to the bottom, but they are swirled up from  
20 the bottom due to swirls in the water caused by the swimming fish, as a result of which they become suspended in the water, causing the water to become turbid and unclear.

It is known to remove these impurities from the water by means of a pump device, which carries the impure water over a  
25 screen, whereby the impurities remain behind on the screen surface. One drawback of this known device is that it is mechanically rather complicated and expensive. Another drawback is the fact that the pump device requires a great deal of electric energy during operation, which makes the  
30 device expensive to use. The device furthermore becomes clogged rather quickly by the impurities retained thereon, after which cleaning of the screen is necessary.

The object of the invention is to provide a device for purifying water in a basin which is of simple and inexpensive  
35 construction and which does not require any energy in use.

In order to accomplish that objective, the device according to the invention is characterized in that said device comprises a flat, box-shaped construction having a

closed bottom and (a) closed upright wall or walls, which box-shaped construction is provided on its upper side with a coarse-mesh covering and which can be freely placed on the bottom of the basin.

5       The device according to the invention can simply be placed with its closed bottom on the bottom of the basin, after which the impurities suspended in the water can enter the interior of the box-shaped construction through the coarse-mesh covering upon sinking to the bottom, and deposit  
10 on the bottom of said box-shaped construction. The fish which are swimming around in the water can no longer reach the impurities that have collected on the bottom of the box-shaped construction and swirl up said impurities so that they will become suspended in the water again. Also the swirls  
15 which are caused by the fish which are present in the basin cannot penetrate the box-shaped construction far enough for the impurities deposited therein to be swirled up again. The impurities that are present in the water in the basin are thus collected in the box-shaped construction in a very  
20 simple and effective manner. When a certain amount of impurities has collected in the box-shaped construction, the box-shaped construction must be taken out of the basin and the impurities must be removed therefrom. Said impurities can subsequently be put to very effective use, for example as  
25 fertilizer for flowers and plants. Surprisingly, it has become apparent that it is possible to achieve a very quick, effective and inexpensive purification of a basin with this very simple construction. A test arrangement showed that a basin which had become turbid by impurities present therein  
30 had become completely clear after a few days already.

According to another embodiment of the device according to the invention, the upright wall or walls have a height such that swirls caused by fish which are present in the basin cannot penetrate the box-shaped construction at all or  
35 only to a small depth. Preferably, the upright wall or walls have a height of about 12 cm.

According to the invention, the box-shaped construction may be circular, square or rectangular in shape, but also

other shapes are possible.

According to the invention, the box-shaped construction may be provided on its upper side with a handle, by means of which the device can be placed into the water and be removed 5 therefrom. According to another embodiment, the coarse-mesh covering is fixed to the wall or walls of the box-shaped construction or connected thereto by means of a snap connection or a screwed connection.

According to the invention, the box-shaped construction 10 may be made of a metal or of plastic material, whereby in the latter case the plastic must have a specific weight higher than that of the water, or the box-shaped construction may be weighted, as a result of which the box-shaped construction is prevented from floating in the water.

15 The invention will now be explained in more detail with reference to the drawing.

Figure 1 is a sectional view of a basin, on the bottom of which a device according to the invention is placed.

Figures 2 and 3 are perspective views of two possible 20 embodiments of the box-shaped construction according to the invention.

Figure 4 is a schematic view of a coarse-mesh covering in the shape of a grid.

Figure 5 is a schematic, sectional view of another 25 embodiment of the box-shaped construction according to the invention.

In Figure 1, numeral 1 indicates a basin in which water 2 is present, whilst a layer 3 of gravel or the like is present on the bottom of the basin. Present on the gravel 3 30 is a box-shaped construction 4, the construction of which is shown in more detail in Figures 2 and 3.

Figure 2 shows in perspective view a box-shaped construction 4 which comprises a closed bottom 5 with an upright wall 6, which is likewise closed, and a coarse-mesh 35 covering 7. Attached to wall 6 are two strips 8, to which a handle 9 is connected. The box-shaped construction 4 is circular in shape in this embodiment, with wall 6 having a height of about 12 cm and a diameter of about 50 cm. The mesh

size of the coarse-mesh covering 7 is 3 x 3 cm. A different mesh size is also possible, depending on the circumstances. Important is that the mesh size is such that larger fish, in any case, cannot enter the box-shaped construction. It may be possible for smaller fish to enter the box-shaped construction through the meshes, but they will cause little swirling therein, so that the sediment will not be swirled up. It will be apparent that the above dimensions are only given by way of example, and that other dimensions are very well possible without detracting from the effectiveness of the device. The coarse-mesh covering 7 may be fixedly connected to wall 6, for example by glueing or welding, but the coarse-mesh covering 7 may also be detachably connected to wall 6 via a snap connection or a screwed connection.

Figure 3 shows a box-shaped construction similar to the one which is shown in Figure 2, but in this embodiment the box-shaped construction is square rather than circular in shape. The square sides of said construction may measure 50 x 50 cm, whilst the height of the walls is 6 is 12 cm in this embodiment as well, but it should be noted that said dimensions may be altered as desired. The operation of the device is as follows: the box-shaped construction is placed onto the bottom of basin 1, after which impurities suspended in water 2 can sink and enter the box-shaped construction 4 via the coarse-mesh covering 7 and subsequently deposit on the bottom 5 thereof as sediment 10. The coarse-mesh covering 7 prevents fish which are swimming around in water 2 from getting to sediment 10 in the box-shaped construction and swirling it up. Also swirls in the water 2 caused by the fish will hardly be able to enter the box-shaped construction, if at all, so that also said swirls can no longer stir the sediment 10. In this manner the impurities are effectively caught from water 2 in the box-shaped construction 10. The effect will be noticeable after a short time already, and the water will become clear and remain so. When a certain amount of sediment has collected in the box-shaped construction 4, the box-shaped construction can easily be taken out of the basin by means of handle 9, after which the sediment can be

removed from the box-shaped construction, which sediment can subsequently be put to good use as fertilizer for flowers or plants.

Although a particular shape of the handle 9 is shown in the drawing, it will be understood that the handle may have any suitable shape that makes it possible to take hold of it.

Preferably, the handle is in the form of a ring 20, as is shown in Figure 5, wherein ring 20 is provided with a threaded end 21, which can be screwed into a tube 22 which is centrally disposed on bottom 5. This makes it possible to pick up the box-shaped construction 4 in a central point by means of ring 20, thus minimizing the risk of tilting.

Figure 4 schematically shows a coarse-mesh covering in the shape of a grid 11 which is built up of first walls 12, which extend at least substantially parallel to each other, and second walls 13, which likewise extend at least substantially parallel to each other and which include an angle with first walls 12. Walls 12 and 13 have a height of about 1.5 cm, whilst their thickness is limited to about 1 - 3 mm. In this manner a solid covering having a mesh size of about 3 x 3 cm is obtained. Such a covering may be made of plastic material, for example.

It is noted that instead of being made in the form of a grid as described above, the covering may also be made up of a metal or plastic gauze.

Box-shaped construction 4 may be made completely or partially of a metal and/or of plastic material. If a plastic is used as the construction material, said plastic must either have a specific weight higher than that of water or the construction must be weighted at certain points, so that the box-shaped construction will not float in the water when it is placed into the basin.

From the foregoing it will be apparent that the invention provides a very simple device which can be produced at low cost, by means of which impurities can be removed from water in basins and the like in a surprisingly simple, effective and inexpensive manner.

## C L A I M S

1. A device for purifying water in a basin, such as a fishpond or an aquarium, for example, characterized in that  
5 said device comprises a flat, box-shaped construction having a closed bottom and (a) closed upright wall or walls, which box-shaped construction is provided on its upper side with a coarse-mesh covering and which can be freely placed on the bottom of the basin.
- 10 2. A device according to claim 1, characterized in that the mesh size of the coarse-mesh covering is such that impurities present in the water can enter the box-shaped construction therethrough.
3. A device according to claim 2, characterized in that  
15 said coarse-mesh covering is in the form of a grid comprising a number of first walls extending substantially parallel to each other and a number of second walls likewise extending substantially parallel to each other, which include an angle with said first walls, wherein said first and said second  
20 walls have a height of approximately 1.5 cm and a thickness of 1 - 3 mm.
4. A device according to claim 1, 2 or 3, characterized in that said upright wall or walls have a height such that  
25 swirls caused by fish which are present in the basin cannot penetrate the box-shaped construction at all or only to a small depth.
5. A device according to claim 4, characterized in that said upright wall or walls have a height of about 12 cm.
6. A device according to any one of the preceding  
30 claims, characterized in that said box-shaped construction is circular in shape, the diameter of said circle being about 50 cm.
7. A device according to any one of the claims 1 - 5, characterized in that said box-shaped construction is square  
35 or rectangular in shape.
8. A device according to any one or more of the preceding claims, characterized in that said box-shaped construction is provided on its upper side with a handle, by



means of which the device can be placed into the water and be removed therefrom.

9. A device according to any one or more of the preceding claims, characterized in that said coarse-mesh  
5 covering is fixed to the wall or walls of the box-shaped construction or connected thereto by means of a snap connection or a screwed connection.

10. A device according to any one or more of the preceding claims, characterized in that said box-shaped  
10 construction is made of a metal or of plastic material.

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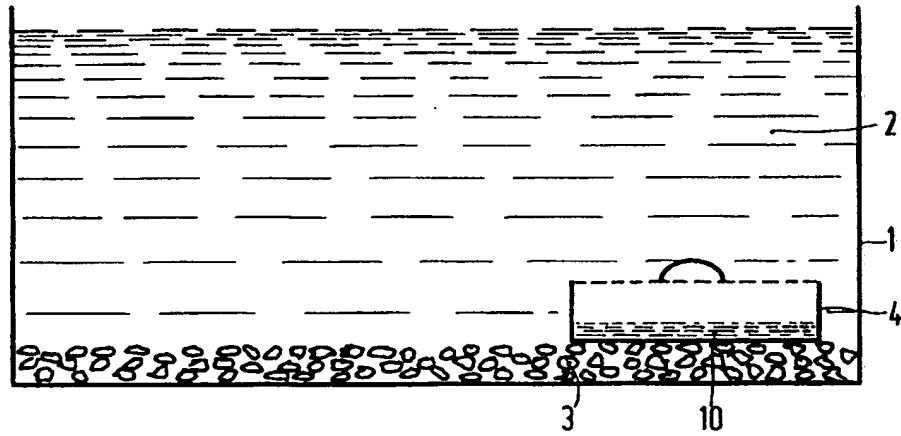


FIG. 1

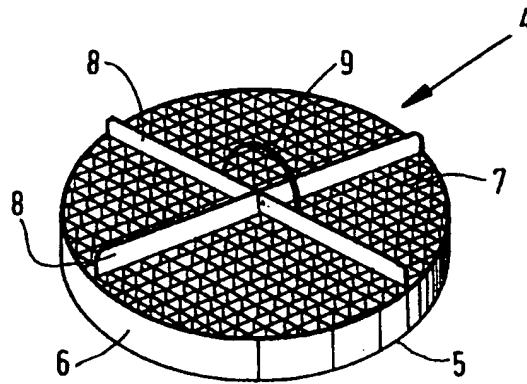


FIG. 2

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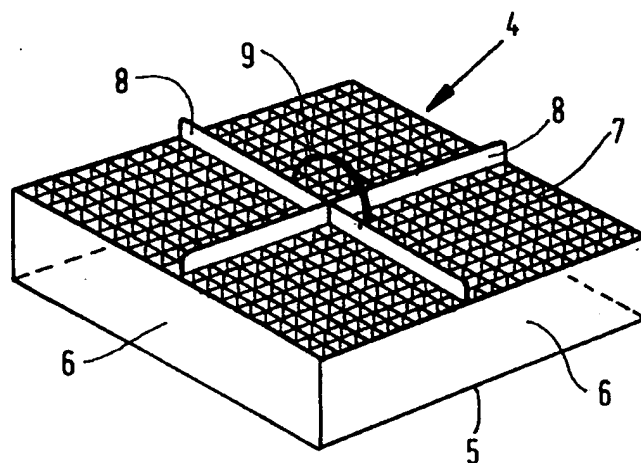


FIG. 3

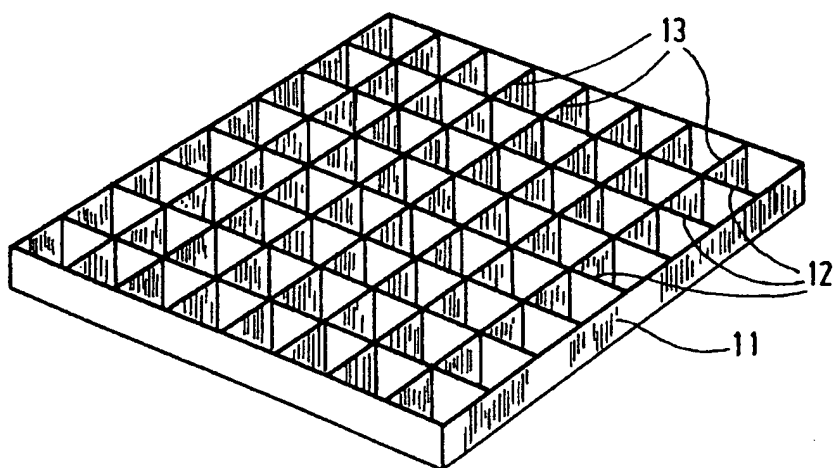


FIG. 4

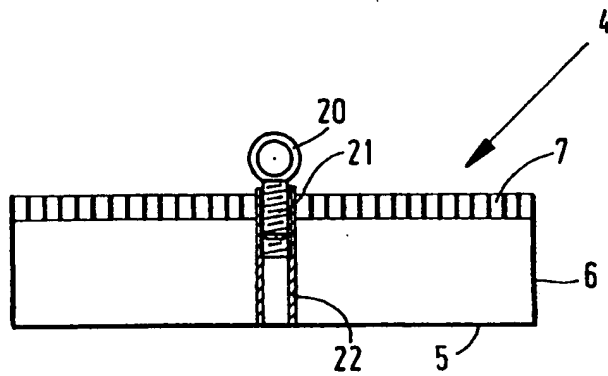


FIG. 5

## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/NL 99/00510

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 A01K63/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 A01K B65B B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 94 05 208 U (P & D SYSTEMTECHNIK GMBH) 26 May 1994 (1994-05-26) claims 1,3; figures 1,2	1,2,4,5, 7,10
X	US 5 375 537 A (GILLISPIE) 27 December 1994 (1994-12-27) figures 1-7	1-7,9,10
A	DE 38 10 999 A (MICHALSKI) 19 October 1989 (1989-10-19)	

☐ Further documents are listed in the continuation of box C.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 9405208	U	26-05-1994	NONE	
US 5375537	A	27-12-1994	US 5307931 A US 5392911 A	03-05-1994 28-02-1995
DE 3810999	A	19-10-1989	NONE	